

CLAIMS:

- Sub 1
1. An isolated STEAP-2 protein having an amino acid sequence shown in FIG. 9.
- 5 2. An isolated polypeptide ~~that~~ at least 8 contiguous amino acids of the protein of claim 1.
3. An isolated polypeptide comprising an amino acid sequence which is at least 90% identical to the amino acid sequence shown in FIG. 9 over its entire length.
- Sub a2 10 4. An isolated polynucleotide selected from the group consisting of (a) a polynucleotide having the sequence as shown in FIG. 9, wherein T can also be U; (b) a polynucleotide encoding a STEAP-2 polypeptide whose sequence is encoded by the cDNA contained in plasmid 98P4B6-GTD3 as deposited with American Type Culture Collection as Accession No. PTA-311; and (c) a polynucleotide encoding the STEAP-2 protein of claim 1.
- 15 5. An isolated polynucleotide which selectively hybridizes under stringent conditions to a polynucleotide according to claim 4 or its complement.
- 20 6. An isolated fragment of a polynucleotide according to claim 4 which is at least 20 nucleotide bases in length.
7. An isolated polynucleotide which is fully complementary to a polynucleotide according to claim 4.
- 25 8. An isolated fragment of a polynucleotide according to claim 7 which is at least 20 nucleotide bases in length.
9. A recombinant expression vector which contains a polynucleotide according to claim 4.
- 30 10. A host cell which contains an expression vector according to claim 9.
11. An isolated polynucleotide according to claim 5 which is labeled with a detectable marker.
- 35 12. A process for producing a STEAP-2 protein comprising culturing a host cell of claim 10 under conditions sufficient for the production of the polypeptide and recovering the STEAP-2 protein from the culture.
13. An antibody which specifically binds to the STEAP-2 protein of claim 1.

14. A monoclonal antibody according to claim 13.
15. The monoclonal antibody of claim 14 which is labeled with a detectable marker.
- 5 16. The monoclonal antibody of claim 14 which is conjugated to a toxin.
17. The monoclonal antibody of claim 14 which is conjugated to a therapeutic agent.
- 10 18. An assay for detecting the presence of a STEAP-2 protein in a biological sample comprising contacting the sample with an antibody of claim 15, and detecting the binding of STEAP-2 protein in the sample thereto.
- 15 19. An assay for detecting the presence of a STEAP-2 polynucleotide in a biological sample, comprising
- (a) contacting the sample with a polynucleotide probe which specifically hybridizes to a polynucleotide of claim 4 or its complement; and
- 20 (b) detecting the presence of a hybridization complex formed by the hybridization of the probe with STEAP-2 polynucleotide in the sample, wherein the presence of the hybridization complex indicates the presence of STEAP-2 polynucleotide within the sample.
- 25 20. An assay for detecting the presence of STEAP-2 mRNA in a biological sample comprising:
- (a) producing cDNA from the sample by reverse transcription using at least one primer;
- (b) amplifying the cDNA so produced using STEAP-2 polynucleotides as sense and antisense primers to amplify STEAP-2 cDNAs therein;
- 30 (c) detecting the presence of the amplified STEAP-2 cDNA,
- wherein the STEAP-2 polynucleotides used as the sense and antisense primers are capable of amplifying the polynucleotide shown in FIG. 9.
- 35 21. A composition for the treatment of prostate cancer comprising an antibody according to claim 14, 16 or 17, wherein the antibody binds to an extracellular domain of STEAP-2.

22. A vaccine composition for the treatment of a cancer expressing a STEAP-2 protein comprising a STEAP-2 protein according to claim 1 and a physiologically acceptable carrier.

23. A vaccine composition for the treatment of a cancer expressing a STEAP-2 protein comprising an immunogenic portion of a STEAP-2 protein according to claim 2 and a physiologically acceptable carrier.

24. An isolated STEAP-3 protein having an amino acid sequence shown in FIG. 10A.

25. An isolated polypeptide of at least 8 contiguous amino acids of the protein of claim 24.

26. An isolated polypeptide comprising an amino acid sequence which is at least 90% identical to the amino acid sequence shown in FIG. 10A over its entire length.

27. An isolated polynucleotide selected from the group consisting of (a) a polynucleotide having the sequence as shown in FIG. 10A, wherein T can also be U; and (b) a polynucleotide encoding the STEAP-3 protein of claim 1.

28. An isolated polynucleotide which selectively hybridizes under stringent conditions to a polynucleotide according to claim 27 or its complement.

29. An antibody which specifically binds to the STEAP-3 protein of claim 24.

30. A monoclonal antibody according to claim 24.

31. The monoclonal antibody of claim 30 which is labeled with a detectable marker.

32. The monoclonal antibody of claim 30 which is conjugated to a toxin.

33. The monoclonal antibody of claim 30 which is conjugated to a therapeutic agent.

34. An assay for detecting the presence of a STEAP-3 protein in a biological sample comprising contacting the sample with an antibody of claim 31, and detecting the binding of STEAP-3 protein in the sample thereto.

35. An assay for detecting the presence of a STEAP-3 polynucleotide in a biological sample, comprising

(a) contacting the sample with a polynucleotide probe which specifically hybridizes to a polynucleotide of claim 27 or its complement; and

5 (b) detecting the presence of a hybridization complex formed by the hybridization of the probe with STEAP-3 polynucleotide in the sample, wherein the presence of the hybridization complex indicates the presence of STEAP-3 polynucleotide within the sample.

36. An assay for detecting the presence of STEAP-3 mRNA in a biological sample comprising:

10 (a) producing cDNA from the sample by reverse transcription using at least one primer;

(b) amplifying the cDNA so produced using STEAP-3 polynucleotides as sense and antisense primers to amplify STEAP-3 cDNAs therein;

(c) detecting the presence of the amplified STEAP-3 cDNA,

wherein the STEAP-3 polynucleotides used as the sense and antisense primers are capable of amplifying the polynucleotide shown in FIG. 10A.

20 37. A composition for the treatment of prostate cancer comprising an antibody according to claim 30, 32 or 33, wherein the antibody binds to an extracellular domain of STEAP-3.

38. A vaccine composition for the treatment of a cancer expressing a STEAP-3 protein comprising a STEAP-3 protein according to claim 24 and a physiologically acceptable carrier.
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39. A vaccine composition for the treatment of a cancer expressing a STEAP-3 protein comprising an immunogenic portion of a STEAP-3 protein according to claim 25 and a physiologically acceptable carrier.
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40. A method of inhibiting the growth of tumor cells expressing a STEAP-2 protein, comprising administering to a patient an antibody which binds specifically to the extracellular domain of STEAP-2 in an amount effective to inhibit growth of the tumor cells.

35 41. The method of claim 40, wherein said antibody is conjugated to a cytotoxic agent.

42. A method of treating a patient susceptible to or having a cancer which expresses STEAP-2, comprising administering to said patient an effective amount of an antibody which binds specifically to the extracellular domain of STEAP-2.

5 43. The method of claim 42 wherein said antibody is conjugated to a cytotoxic agent.

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